The Excavating Engineer

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Road Maintenance Work in Jefferson County, Alabama

Methods of Road Maintenance Carried On by that County with a Description of the Shovel Operation

SITUATED in the north central part of the State of Alabama, and including most of the industrial and mining region around Birmingham, lies Jefferson County. In point of size it is one of the largest counties in the state, and from an industrial standpoint is undoubtedly the most interesting. Vast deposits of coal underlie the western side of the county, while near the center, in what is known as Red Mountain, occurs a large body of iron ore. It can be seen that Birmingham, which is built on a limestone formation, has all the materials necessary for the manufacture of iron and steel.

This has led to an extensive industrial development, accompanied by a rapid increase in population, the present population of the county being 487,000. When it is considered that only 190,000 of this population live in Birmingham proper, the others being widely scattered at various mines and industrial plants, the necessity for an extensive and well-maintained road system becomes apparent.

At the present time there are approximately 1600 miles of various types of roads in the county. This includes seven state routes out of Birmingham, which were built by State and Federal Aid. The roads vary in type from the concrete base with asphalt top, of which there are 65 miles, to the less important roads which are built of local materials, such as chert, red ash and shale. The red ash is an unusual and very satisfactory road-building material. It is formed when the waste piles from coal mines, containing fine coal, slate and shale, catch fire by spontaneous combustion. The resulting ash and clinker is reddish in color, and when spread and subjected to traffic compacts into a durable wearing surface.

Such an extensive road system requires persistent and consistent maintenance work. Much credit for the thorough manner in which this work is carried out is due to E. H. Wheeler, County Road Supervisor, acting under the capable supervision of D. C. Ball, President of the Board of Revenue, and direction of C. J. Rogers, County Engineer of Jefferson County. The County Board of Revenue, which is composed of Messrs. D. C. Ball, J. W. Gwin, Lacy Edmondson, T. E. Huey and W. B. Copeland, passes on all expenditures by the county and corresponds in part to the usual County Board of Road Commissioners.

It has been the policy of the members of the board of road officials of Jefferson County, Alabama, not only to build roads but to maintain them; and not to spend money for roads but to

From Left to Right Standing in Front of the Machine are C. C. Harry, Camp Warden; Charles Hamilton, Mechanical Superintendent and E. H. Wheeler, County Superintendent

invest money in roads. To the average taxpayer and automobile user, the criterion of a good road is the ability to drive comfortably and speedily over the road without unpleasant jolting. It is, therefore, the aim of those in charge of the road work to secure roads of lasting construction and maintain them in the best possible condition. The county is divided into seven districts under the road supervisor. Convict labor is used to work the roads, and a convict camp in charge of a warden is conveniently located in each district. Eight camps employing free labor are in use and are being used temporarily to aid the regular camps.

In order to maintain successfully these roads a large amount of equipment is necessary. At the

time maintenance work was begun twenty-seven years ago, the entire equipment consisted of one road-grading machine, six mules, and a portable blacksmith outfit. At present there is in service thirteen tractors, twelve 2-ton trucks, twenty 3½-ton trucks, one 5-ton truck, thirty 1-yard wagons with slat bodies, one loading machine, one ¾-yard caterpillar shovel, one 10-ton roller, road scrapers and graders.

It can be seen that considerable repair work is necessary on this amount of equipment, and for this purpose a well-laid-out shop at Ketona is maintained. This shop contains the usual machine shop equipment, and in addition has wood-working machinery and a blacksmith shop with steam hammer and welding equipment. A force of

Another view of the shovel digging into a bank 35-feet high. The material is chert, a mixture of flint-like stone and clay, in such proportions as to form an excellent material for road-building purposes.

skilled mechanics under the supervision of Charles Hamilton, mechanical superintendent, handles all repair work. Another important feature in connection with this shop is a large stock of repair parts for the various machines, insuring their prompt return to service in case of breakdown. A steam laundry is operated in conjunction with the shop, at which all convict laundry work is done.

Steam Shovel Operation

Loading of surfacing material in the districts is generally done by convicts from nearby pits. In order to lower the cost of loading and reduce truck delays while being loaded, consideration was given to a power loading machine. After careful study of the various types, the Board of Revenue purchased a 20-B Bucyrus caterpillar shovel, and installed it in a chert pit at Camp No. 4. This camp is near Bessemer and is under the charge of Mr. C. C. Harry.

Since the date of its purchase, the machine, which is equipped with a ¾-yard dipper, has been used to load chert for resurfacing purposes. This material occurs in large amounts near Bessemer and makes an excellent road material. It is a mixture of flint-like stone and clay in such proportion as to form a smooth hard road.

The shovel is digging in a bank about 35 feet high and loading into trucks. Except in the case of a few hard spots, which were loosened with explosives, no blasting has been done. The abrasive quality of the material is shown by the fact that a set of manganese points last about two weeks before replacement is necessary.

Water is taken from a small stream, which has been dammed to afford a reservoir. By means of the steam siphon, with which the shovel is furnished, water is lifted from the stream into the shovel tank. Coal is hauled in from a nearby siding, the daily consumption averaging three-quarters of a ton. Due to the amount of time spent in waiting for trucks no high outputs have been attempted. At present fifteen trucks are hauling an average distance of four miles from the machine. Under these conditions a daily output of 400 to 500 tons has been maintained.

The machine was recently moved to a new pit about one mile from the pit in which it commenced operations. The path followed in this move was an old road with many bends and steep grades. In spite of the unfavorable circumstances the move was accomplished in about a half day.

Since installing the shovel, loading costs have been reduced and the number of ton miles per truck increased. To quote the words of E. H. Wheeler, the road supervisor, "The 20-B Bucyrus Shovel is one of the most efficient machines we have."

We are indebted to Messrs. Wheeler, Hamilton and Whorley for the above information.

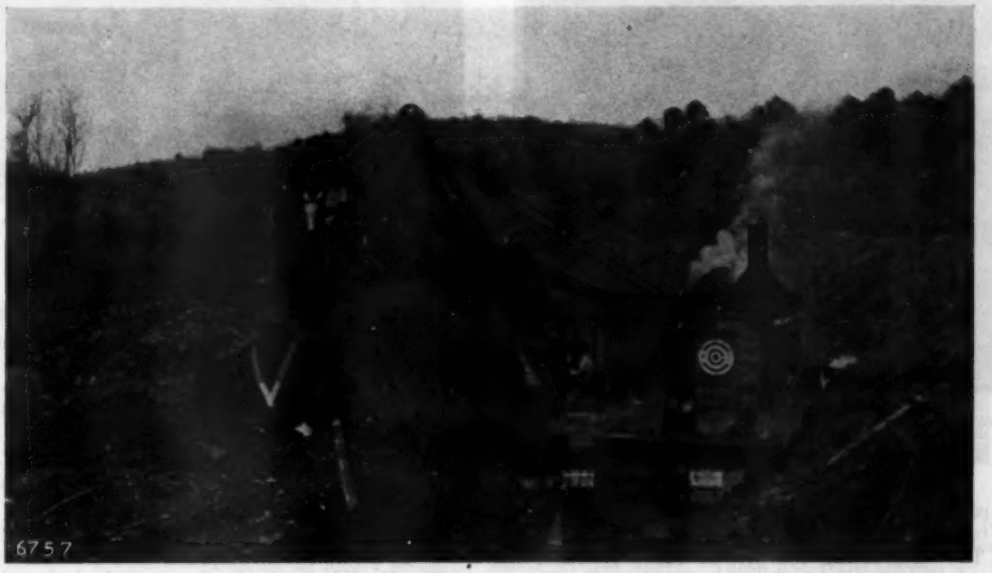
Stripping and Loading Coal with a ¾-yard Revolving Shovel

Description of the Unique Installation of the Pocahontas Coal & Mining Company in Walker County, Alabama

WITHIN a quarter mile of the Pocahontas station on the Frisco Railroad, 14 miles north of Jasper, Alabama, the Pocahontas Coal and Mining Company of Carbon Hill have underway a most unique coal-stripping operation, which although at present is but in its preliminary stages deserves watching for the future.

The property of the company consists of 600 acres adjoining the property of the Kershaw Mining Company.

Operations showing how shovel builds dams across cut to prevent water from flooding the machine. The shovel strips during the night, returns and loads the coal in the daytime.



Loading Coal into Wagons in a 14-foot Cut, 25 Feet Wide, with a Bucyrus 20-B "Bullseye" Extra High Lift Shovel

Views of the Pocahontas Coal & Mining Company's Operations Near Jasper, Alabama

The overburden runs from 6 to 30 feet deep, and operations are now being carried on in the shallower stripping, which averages about 14 feet, by a Bucyrus 20-B "Bullseye" extra high lift shovel, with a ¾-yard dipper, a 22-foot 6-inch boom and a 17-foot dipper handle, mounted on caterpillars.

The coal vein averages 28 inches in thickness and is covered by a four-foot strata of blue slate.

When waiting for wagons, the shovel keeps itself on dry ground by digging a sump back of itself to catch the water, throwing up a dam with the excavated material. Note the coal vein in front of the machine.

This strata in the deeper stripping runs from 15 to 20 feet thick and will have to be blasted.

The interesting feature of this operation is the manner in which the shovel is employed for the double purpose of stripping and loading the coal.

The 20-B is carrying parallel cuts down the property, averaging 25 feet wide, casting the overburden over into the cut which was previously mined. At the end of the day shift the shovel moves up the cut and during the night is engaged in stripping. The next morning the day crew brings her back down to the coal and loads coal into wagons on the bank, two 10-hour shifts being worked. One hundred tons of coal are moved out in a day's operation, eight wagons being used with a haul of 300 yards. The coal is shipped as run of the mine.

A survey has been completed for a spur track and it is intended later on to load into cars.

The drainage is handled by natural flow, aided by a ditch excavated by hand, down the cut. During wet weather, however, the water has a tendency to seep into the cut behind the shovel. The dams shown in one of our views were built

W. L. Sides, Secretary of the Company and Superintendent of Operations with His Shovel Operator, P. O. Crosbie, to the Left.

by the shovel to keep the water back from the machine. Occasionally when it fills up too deep under the machine, the shovel is swung around and acts as a bailer, in fact, Mr. Sides, the secretary of the Company and the superintendent on the work, claims that it will handle more water than a 6-inch centrifugal pump.

The caterpillars enable it to be moved up and down the cut quickly and with very little trouble, making it possible to double the usefulness of the machine with no effort, that is, enabling it to serve the double purpose of a stripper and a loader.

The President of this Company is Judge C. B. Teasly of Montgomery. G. L. Wakefield is General Manager and W. L. Sides, Secretary, and the active man on the operations, to whom we are indebted for the above information. P. O. Crosby is at the levers on the 20-B.

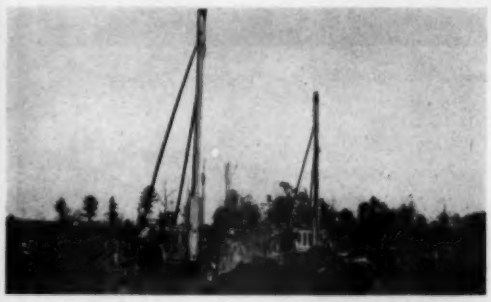
The Kershaw Mining Company's Coal-Stripping Operations in Walker County, Alabama

A Highly Successful Operation Carried On by Well-Known Contractors

AMONG the many interesting coal-stripping operations now under way in the Jasper District of Alabama in Walker County is that of the Kershaw Mining Company of Birmingham. This operation is of particular interest to our readers as the president of the firm, C. G. Kershaw, and the secretary and treasurer, T. M. Porterfield, are identified with the best known contracting firms in the South.

The Kershaw Mining Company have two operations, one an underground mine at Dora, 14 miles south of Jasper, and the strip mine, which is the subject of this article, at Cedrom, 5 miles south of Carbon Hill and about 13 miles north of Jasper on the Frisco.

The deposit is known locally as the Cedrom Seam. It compares favorably with the Black Creek Seam and has been classified as such in



Well drills in operation ahead of the shovel. Holes are drilled to within two feet of the coal, sprung by dynamite and shot by black powder, in order to break up the heavy seam of sand rock.

Government reports. It is an excellent grade of steam and domestic coal.

The property is on slightly rolling ground and the seam is unusually level, having few dips to complicate operation. The vein is from 24 inches to 30 inches in thickness. 45½ acres have been stripped up to January 1, 1923, and a sufficient deposit remains for a good three more years of stripping.

Stripping Operations

The stripping is being handled by a 175-B Bucyrus shovel with a 75-foot boom and a 48-foot handle. This shovel started digging in late November, 1921, and has been running steadily day and night for 28 months in digging which is considerably more severe than the average, as our views will testify, with only 15 days lost due to repairs.

The overburden averages 20 feet deep but has run as deep as 34 feet. At the time this article is written the shovel was stripping 24 feet. This consists in the average cut of 3 feet of blue slate over the coal, which is dug with the shovel easily, and over that 3 to 4 feet of hard sandstone and the rest a heavy red clay and gravel. The rock in places runs considerably thicker as illustrated in one of our views.

The sandstone is extremely hard and does not break up well. Its presence requires blasting. Frequently the shovel has handled rocks weighing 25 tons and more. The shovel is preceded by two

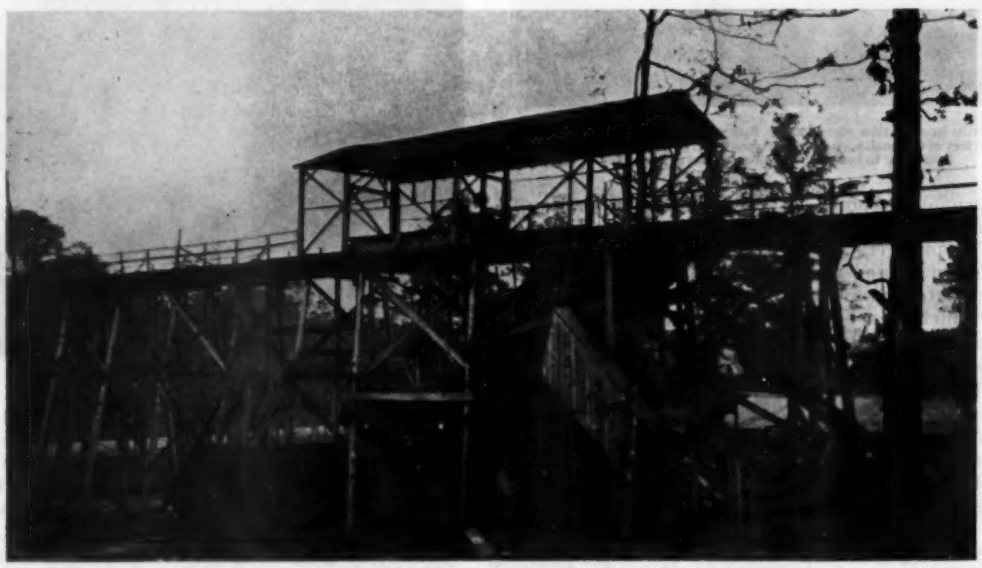
A View of the Cut Showing the Character of Material Handled by the 175-B

well drills of local manufacture, which drill to within two feet of the coal, the holes being spaced about 25 feet apart. These holes are sprung with dynamite, the charge being 15 sticks of 40% Atlas to a hole. They are then loaded and shot with black powder, three to four cans to each hole.

The drilling operations have not been able to keep pace at all times with the big shovel, frequently holding the machine up.

The cuts average 70 feet in width and follow no regular preconceived layout. They are planned,

The Kershaw Mining Company's 175-B Bucyrus Shovel Stripping in Front of an Erie B at Pocahontas, Alabama



View of the Tipple and Washing Plant

Views of the Kershaw Mining Company's Coal-Stripping Operations in Walker County, Alabama

however, to provide the proper drainage away from the shovel.

The output of the stripping shovel is largely limited by the car supply which during 1922 has been far from good. Its highest month was in October, 1921, when it handled 83,070 cubic yards, working three eight-hour shifts.

The machine is now working two twelve-hour shifts and is uncovering 125 50-ton carloads of coal per month when the car supply is favorable.

The 175-B, preparing to move up—track sections being placed. Note heavy sand rock strata at bottom of cut and well drill in operation.

The 175-B is followed by an Erie B, ¾-yard shovel, which loads the coal into 3-yard Western Cars. The Company has 19 of these cars which are hauled to the tipple by two locomotives, a 10-ton Vulcan and a 14-ton Davenport, in two 7-car trains. The tipple is alongside the Frisco tracks about a half mile from the shovel.

The Tipple

The coal is dumped into a hopper from which it passes to shaking screens, the lump passing directly off the end of the screen into a car. The egg size passes 4-inch holes in the screen and is delivered into another car through a shoot. The nut size passes from the shaking screen to a revolving screen and from the revolving screen to a bin, from which conveyors elevate it into another car. The coal is all washed with sprays.

Light Stripping

Immediately across the railroad track from this operation the Company has had a 30-B Bucyrus shovel stripping in overburden averaging about 14 feet, and loading the coal, the stripping being done at night and the loading in the day time.

At the time this article is written, these operations are held up on account of the poor condition of the roads, the coal being hauled off in wagons. This shovel, however, loads an average of 100 to 120 tons per 10-hour day.

Another view showing the character of the digging. Note the previous cut to the right, and the method of lighting for night work.

Personnel

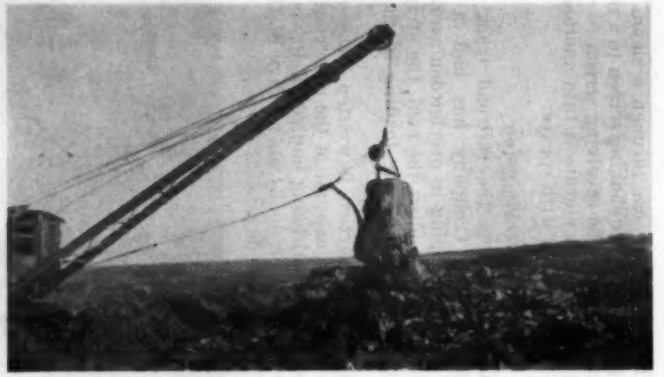
Much of the credit of the success of the operations must be given to Sam Alread, the superintendent, who is always in the midst of things. Mr. Alread is a shovel man of many years' experience, having been with Mr. Kershaw for 18 years.

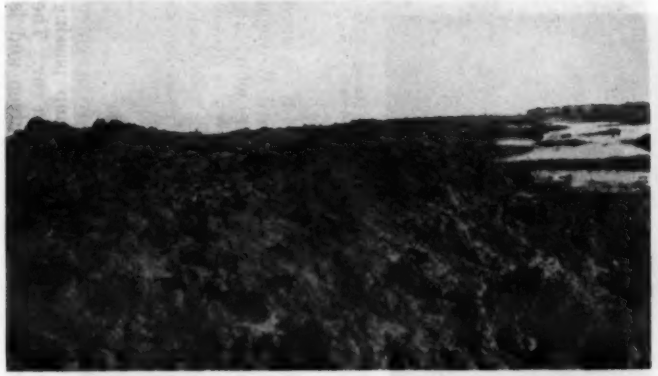
The 175-B is operated by Ed. Kelly on the day shift, with Gray Gullidge on the night shift. J. M. Blackburn and W. H. Price crane this machine on the day and night shifts respectively. Ed. Brown has been the most consistent performer on the Erie. W. B. Reedy is timekeeper.

The output of this mine, as stated, is governed principally by the supply of cars. During 1921, 54,647 tons were shipped, and in 1922, 58,616 tons. This Company's Dora Mine produced 106,500 tons this last year.

As stated before, C. G. Kershaw is President of the Company, John S. Stone, Vice-President, and T. M. Porterfield, Secretary and Treasurer.

This article would not be complete without commenting upon the excellent appearance of the equipment, and the pride which the organization has in it, which is a splendid reflection upon the management and particularly upon the industry of Mr. Alread and his crew.





Views of Oscar Schelling's highway contract, Seal Beach, California. The machine is a 30-B Bucyrus dragline excavator driven with a Diesel oil engine. The lower left-hand view shows the completed fill.

Road Construction with a Diesel Oil Dragline in California

Description of Highway Construction Involving a Fill Along the Shore of the Pacific Ocean — Remarkably Low Fuel Cost

MESSRS. Oscar and Eugene Schelling, contractors of Los Angeles, California, are engaged at present upon a State Highway contract which is of unusual interest, due to the fact that it involves a somewhat different class of work than is usually encountered on road construction.

The work consists of 1¼ miles of a section of highway which is to be built between Long Beach and Seal Beach, California. The complete contract was let to H. H. Peterson of San Diego who is doing the concrete work himself and letting the earth-moving work to the Messrs. Schelling.

The 1¼ miles of road involves about 70,000 cubic yards of excavation, and consists of making a fill across flat ground along the shore of the ocean. This fill varies somewhat due to the character of the material and the amount of water in the ground, but in general the dimensions are 40 feet wide on top, two to one slope at the sides, and a height of between 5 and 9 feet. The machine used on this work is a Bucyrus 30-B oil dragline with a 40-foot boom and a 1-cubic-yard bucket. It is equipped with 55 H. P. mechanical injection oil engine of the Diesel type.

Method of Operation

The method of operation is, as illustrated in our photographs, to borrow material from alongside the location of the fill and deposit it to form a half-section of the road. The machine is then moved to the other side of the projected road and material borrowed there to complete the remaining half-section of fill.

The difficulties encountered in excavation are considerably more than on the average contract. First of all, the work being along the ocean shore there is much water to contend with. At high tide, indeed, the caterpillars of the shovel are frequently under water, making it advisable for the machine to work on mats. It has been found furthermore that due to the conditions of the ground, the fill has shown a tendency to settle. In such instances the driest material is placed at the outside foot of the slope in order to hold the fill, and the more saturated material is cast in the center. This, of course, requires careful operation.

This indicates the heavy, sticky character of the material. Note the bucket load.

The above conditions necessarily show up the operation. Furthermore an added brake on the speed of operation is caused by the character of the material, which consists of a few feet of sticky blue clay, below which is hardpan. This material

Oscar Schelling's Bucyrus 30-B Diesel-Operated Dragline Excavator Digging in Soft Mud

fills the bucket easily and gives the machine a maximum load on each swing. The clay has a tendency on some parts of the work to cling to the bucket, making it difficult to dump.

In spite of these conditions the 30-B Diesel engine operated dragline has given an extremely good account of itself, and the owners are well pleased with its performance.

The official estimate of pay yardage does not give a correct figure of the actual amount of material moved by the machine, as, because of the character of the material, a considerable percentage of the yardage handled cannot be classified as pay material. Between January 15 and February 1st the pay yardage amounted to 8563 cubic yards. However, up to the date of writing the work has been about half completed. The machine is working two shifts.

The Diesel engine feature of the machine is giving excellent satisfaction and, of course, resulting in very cheap operation. No accurate figures have been kept of fuel consumption but it is believed that the machine is using approximately two gallons of fuel oil per hour and about one gallon of lubricating oil per shift. This fuel oil is purchased at a price of 4½c a gallon, and including the cost of hauling it by truck to the machine the price at the dragline is possibly about 7½ to 8c a gallon.

On the day shift Harvey Kramer is the engineer and Arthur Schelling the oiler. On the night shift Frank Mayes is engineer and Sam Viluda oiler.

Does Truck Overloading Pay?

By P. L. Sniffin

It will invariably be found that the excavating contractors who make a practice of overloading their motor trucks do so more through a lack of understanding as to its effect on operating economy than they do through eager desire to get "something for nothing." In other words, there are fewer truck purchasers who deliberately buy a truck with the idea of overloading than there are those who buy, say a two-ton truck, haul two-ton loads with it for a while, then, when a rush period comes along, put on an extra ton or two, and not noticing any perceptible difference in the truck's performance make the practice a permanent policy. Where loads are more weighty than they are bulky, as in the contracting business it is only natural that the operator should feel that carrying capacity is being wasted if the load is confined to the truck's rated capacity.

It is a fact, although on first thought it might seem contrary to reason, that the owner of a high-grade truck, the power and strength of which enables it to withstand severe load conditions, is much harder to convince of the inevitable depreciation of his investment.

The effects of overloading as a deliberate policy may be summed up as follows: (1.) The constant strain on the truck's motor in excess of its rated capacity causes premature wear on the various parts and shortens the life of the motor as a whole. (2.) Both body and chassis are stressed beyond their natural limits of durability. (3.) The effectiveness of brakes and other safety factors is reduced, thereby involving risk of accident and endangering public lives. (4.) Springs are overstressed, tending to cause them to settle and lose resiliency. (5.) Tires are compressed beyond their elastic limits, lose their resiliency and deteriorate rapidly.

One prominent manufacturer briefly presents the subject of overloading in the following manner:

"The most short-sighted economy in which the truck owner can engage in is that of saving in today's costs of transportation by overloading his truck. A motor truck is built to carry a rated load. Its component parts are manufactured with that load in view. Reputable builders provide a margin of strength above that required for the truck's capacity, to guard against stress and strain due to unusual road conditions. This is emergency strength only—it is the capital stock of the truck—and is not to be used to pay dividends in operating. To diminish this emergency reserve by constant use is as foolish as to tear down one's house to feed this winter's furnace.

"In using trucks for the first time owners may be excused in falling into the error of overloading. They have been used to horses. Serious overloads in horse hauling are automatically prevented. A willing horse will haul just so much, then flesh and bone rebel. But a motor truck is inarticulate. It does not protest, and for a time may be made to carry considerably more than its rated load.

"Seeing the immediate dollars to be made by reducing the contemplated number of loads, owners are sometimes blinded to ultimate cost, and for a time profits pile up. Then, after a year or two, when the truck if properly used should be at its maximum efficiency, it suddenly begins to disintegrate. Strained beyond its resistance power by constant overloading it goes to pieces like the historic "one-horse shay"—repair bills mount, and days out of service cut into profits. The accumulated earnings shrink, then disappear, and one day the unwise truck owner awakens to the fact that he has neither truck nor money."

Bucyrus Company to Move Chicago Office

The Central Sales Office of the Bucyrus Company, in Chicago, which for years has been in the McCormick Building, will on May 1st be moved to new and more commodious quarters in 1015 Corn Exchange Bank Building, 134 South La Salle Street.

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The Business Outlook

As everyone knows, we are now riding a slow but steady advance in prices of materials. It is unnecessary to explain this advance to our readers, as the cause thereof is merely the natural result of the old law of supply and demand, stimulated by the period of depression and inaction through which we have recently passed.

There are few of us who are not keenly alive to the fact that this price advance must sooner or later come to a halt. But there are still fewer of us who have been made familiar with the cycles of business prosperity by contact with the facts of hard business experience, who are bold enough to venture a guess or a prophecy as to when this halt will occur, for the reason that no matter how carefully the data is prepared whereon such a prophecy is based, and no matter how expert the forecaster may be, the actual trend of business and prices will be largely influenced in its ultimate course by occurrences and conditions that are impossible even for the modern financial oracle to imagine.

However, there do exist tendencies which have an important bearing upon future prices which are well to consult if we are to read aright the signs of the times.

It is interesting, if perhaps not in any way conclusive, to learn that it is the concensus of opinion of the leading forecasters of the big New York financial institutions that a decline in wholesale prices is expected in the fall or early next winter, followed within the usual period of a few months by a similar decline in retail prices. This will happen, of course, if the horse stays in the barn, and if that left-hand front tire doesn't get too intimate with that expectant nail on the road, etc., in other words if our law makers behave and our unhappy neighbors in Europe don't pull off something spectacular, and several other things of similar caliber.

These experts are emphatic in declaring that this decline will not mean a repetition of our late trip through the tunnel, which fact should bring cheer to our hearts.

One thing we can mark with confidence is the fact that there is a big difference in the present increase in productivity and the boom of 1919, in that commercial credit has so far shown a relatively small expansion and prices have not bounded skyward in such a dizzy curve.

We are apparently not climbing rapidly towards a need of another credit deflation, which may be gleaned from the ratio of bank loans to bank deposits, and until that gets abnormal even the most timid may have no cause of pulling in their horns. In other words the dip in prices will represent a harmless delay in our present march towards prosperity.

So much for the words of the prophets, we can take them or leave them as we will.

However, it is certainly stimulating to be told by our Government experts that American building activity during 1923 will surpass all previous records with an estimated total expenditure of $5,000,000,000 according to reports from architects, contractors and manufacturers of building materials.

It means that the 1922 volume will be exceeded by more than one billion dollars.

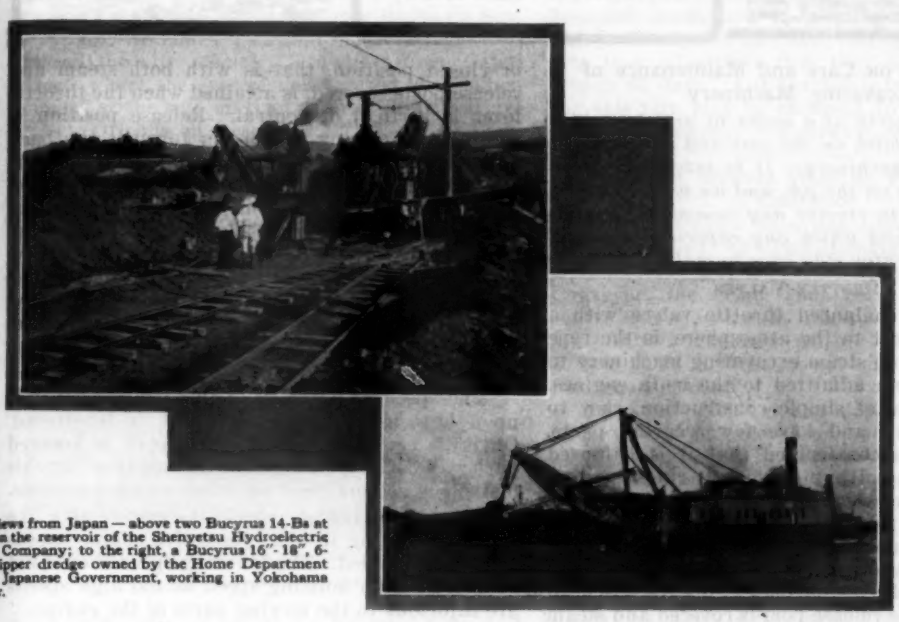
Contractors, realizing the advantages of maintaining their forces of workmen intact from season to season, have carried work right along, except in the extremely cold sections, and have ordered additional material for immediate delivery which they will store until ready for use on new contracts.

Similar activity of vast proportions is planned by the railroads. Actual budget figures for 31 roads, controlling 40 per cent of all trackage in America, call for the expenditure of $387,000,000. Estimates by the Railway Age place the total cost of all rail improvement and construction at approximately $900,000,000 during 1923.

This is a good sign. Congress had adjourned without hostile railroad legislation, doubtless due to the fact that the American public has gradually come to realize that prosperous railroads contribute more to general prosperity, both through purchasing materials and through providing adequate facilities, than would be contributed by a cutting of freight rates. Accordingly, we ought soon to expect relief from the car shortage, which is still near its peak. However, for the present the long-headed ones are ordering all supplies as far in advance as possible so as to insure delivery, dip or no dip.

Bucyrus 20-B "Bullseye" extra high lift shovel, digging the basement for an office building on the corner of Superior Street and Michigan Avenue, Chicago. The trucks are being loaded on the ground surface.

The above photograph was sent us by A. C. Upper of Lockport, Illinois, a steam shovel man of the old school, whose experiences at the levers date back to the early history of the modern steam shovel. It shows two Bucyrus shovels at work on the Chicago Drainage Canal at Lockport, Illinois, in 1895. They were owned by Wright, Meysenberg, Sinclair and Carey. The excavation of this canal is of particular interest in that it is one of the great landmarks in the development of steam shovels. It was the first time that this type of machinery was used in any number on heavy rock excavation. As Mr. Upper says, "Those were the days of real sport when strong back and arms were quite necessary. I operated one, so I know from experience."



Two views from Japan — above two Bucyrus 14-Bs at work on the reservoir of the Shenyetsu Hydroelectric Power Company; to the right, a Bucyrus 16"-18", 6-yard dipper dredge owned by the Home Department of the Japanese Government, working in Yokohama Harbor.

Bill Killifer, Manager of the Cubs, seems to be anticipating a big year. Above is shown one of W. J. Newman's shovels at work lowering the ground level of the Cubs ball park in Chicago by six feet, thus permitting the installation of several rows of seats in front of the grandstand.

· FIELD NOTES ·

Instructions on Care and Maintenance of Excavating Machinery

This is the sixth of a series of articles which we intend to publish on the care and maintenance of excavating machinery. It is intended primarily for the man on the job, and we would be very pleased indeed to receive any comments, suggestions or criticisms which any experienced shovel or dragline operator may care to make.

THROTTLE VALVES

Piston type, balanced throttle valves with a release or exhaust to the atmosphere, is the type commonly used on steam excavating machinery to control the steam admitted to the main engines. These valves are of simple construction, easy to operate, efficient, and have few wearing parts. The valve is so constructed that it is balanced when steam is admitted. Sufficient rings are provided to prevent steam passing the valve except through the proper ports of the casing.

When the hand control lever is moved so that the reach rod moves the throttle lever in such a direction that the piston travels toward the head of the casing, the release port is covered and steam from the header is admitted, passing through the steam ports to the steam chest of the engine. The amount of steam admitted depends on how long a time and how wide the port is uncovered. Neutral or closed position, that is with both steam and release ports covered, is attained when the throttle lever is vertical or central. Release position is attained by moving the piston towards the back flange. In release position the steam port is covered, the release port open to the atmosphere, releasing all pressure from the engine cylinders and steam chests. The release feature enables the operator to reverse the engine without difficulty. With the throttle in release position and the friction clutch engaged, it is possible to lower the dipper or bucket without the use of the brake. The weight of the dipper and handle or the bucket will overhaul the gears and engine.

The speed of lowering in this method depends upon how much the release port is uncovered. On large revolving shovels the dipper is lowered part way back into the pit in this manner but this method is seldom used on other steam machines.

When lowering on release the engine acts like a pump drawing in air. Excessive engine speeds should be avoided. The lowering speed should not be greater than hoisting speed as too high speeds are injurious to the moving parts of the engine.

The release feature is of great advantage in controlling the dipper over a car where the brake and clutch do not permit as easy and safe control as the throttle.

DEVICES YOU OUGHT · TO KNOW ABOUT ·

Monarch Tractor Makes Long Cross-Country Hike

A regular stock Monarch Industrial Tractor has completed the longest overland trip ever attempted by a crawler type machine.

The tractor left Watertown, Wisconsin, on October 8th at noon, traveled forty miles on its first day and spent its first night at Madison, Wisconsin. Good gravel and dirt roads were found through Wisconsin and 119 miles were traversed. From here, they started out over a new State Highway to Cedar Rapids, Iowa, where they found the roads freshly graded and very muddy. Cedar Rapids was reached on October 15th, where many skeptical bystanders shook their heads and were ready to wager that the trip would never be completed.

The caravan left Cedar Rapids on the evening of the 16th and crossed the Mississippi for the second time at Keokuk on the 20th, having run 224 miles in Iowa and thereby completing 380 miles of the journey. Ninety-one miles in Illinois and once again the Mississippi was crossed into Hannibal, Missouri. Through the "Show-Me State" mud was common and good roads the exception, but the Monarch arrived in St. Louis, hale and hearty on October 28th. On October 31st they plunged into the No-Roads Land of South and East Missouri following the Lone Star Trail to Poplar Bluff. After traveling 342 miles through the state, the trail-hitters entered Arkansas, and for the next ten days battled with buck-shot roads, rain, poor bridges and a thickness of mud which buried the 5,000 lb. Trailer to the hubs. Memphis was reached on November 19th, and 957 miles of the trip were history.

Mississippi is out of the mud and on the main highways and the Monarch crew ate their Thanksgiving dinner at Jackson, where Governor Lee M. Russell was among the hospitable group that wished the men "Good Luck." The tractor was parked in front of the Old Edwards Hotel, which has been entertaining noted guests for over 76 years, and which is soon to be torn down to make way for a modern structure.

Leaving Jackson on December 1st, the state line was crossed four days later, and then 155

miles through Louisiana to New Orleans. The tractor was parked outside the city limits on Sunday night, December 10th and on December 11th, entered the city officially, crawling down Canal Street, where the eyes of many gazed with astonishment at the sign on the trailer, "We will arrive in New Orleans on December 12th."

Members of the New Orleans Chamber of Commerce and the Auto Club, representatives of the U. S. Ordnance Department, Motorcycle police, and southern Monarch friends, were among those who escorted the caravan on its triumphant entry into the city. The tractor was exhibited in

Monarch Industrial Tractor

front of the Grunewald Hotel for four days, and then affectionately loaded into a freight car by Blondie Sorenson, the driver.

On orders from Washington, Capt. J. W. Peairs of the Army Ordnance Department at New Orleans, assisted by Wm. M. Meyers, Ordnance Machinist, made a close inspection of the tractor, and stated that the endurance test was remarkable, both in its execution and the ability of the machine to withstand such a gruelling drive. During the last few days of the trip, the Ordnance men closely observed the tractor and reported favorably to Washington.

The entire trip consisted of 1,513.3 miles. It was made in 399.5 hours, one day before the scheduled time. According to the "Log Book," in which was kept a record of each day's happenings, the tractor consumed 1290 gallons of gasoline and 30 gallons of lubricating oil. This would make 3.41 quarts of gasoline to the mile. The trip lasted 57 days. Actual running time, 396 hours and 15 minutes. The average speed per hour of running was 3.8 miles.

After close examination of the bearings there was found to be very little wear. The track shoes were somewhat worn and the corner of one of them was broken off; however, the entire trip was made without changing a track shoe. In fact it is stated that only two extra shoes were carried on the trip. The light cost of repairs for the trip was only $44.25.

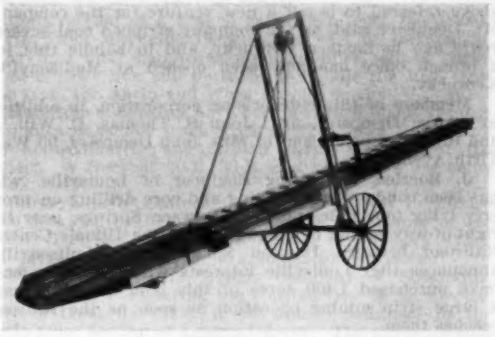
The plan and execution of the long distance crawl, was not only an indication of manufacturing enterprise, but a convincing display of unbounded confidence in their production, which was proven by the fact that before beginning their trip they advertised that they would make this trip in 85 days. Any further information regarding this trip may be obtained from the Monarch Tractor Company, Watertown, Wisconsin.

Link-Belt Slashes Price on Portable Belt Conveyor

It has recently been announced by the Link-Belt Company of Philadelphia, Chicago and Indianapolis, that the price of their Portable Belt Conveyor, the "Cub," has been slashed 16 per cent. This machine, as illustrated, formerly sold for $700.00. The new price is $585.00 complete with 2 H. P. electric motor, and bears the Link-Belt guarantee.

The Link-Belt Company claims that due to the large volume of orders on hand, surpassing anything experienced in several years, the "Cub" loader was put on a quantity production basis, resulting in a large saving in manufacture, which is reflected in the new low price.

The "Cub," we are informed, is even a more sturdy loader than the machine which sold at the higher figure. It weighs almost twice as much as similar machines of its size and class. The 18-inch



The Link-Belt Portable Conveyor

wide conveyor belt is guaranteed against cutting or fraying. The speed at which the conveyor belt should run is 250 feet per minute, and with uniform feeding, has a capacity of 45 cubic feet per minute.

Portable Belt Conveyors are used for unloading and loading cars, trucks and wagons, of any loose material such as coal, sand, stone, gravel, fertilizer, foundry refuse and similar materials, replacing hand-shovelers, and aiding the labor that does this class of work to do their work more quickly, easily and economically. Further information may be obtained from the Link-Belt Company, 910 South Michigan Avenue, Chicago, Illinois.

SHOTS FROM THE · FIRING LINE ·

Central States Notes

BY M. J. WOODHULL, WILLIAM PARROTTE AND MARK GAYLORD

According to recent newspaper reports, the Dempster Construction Co. yesterday announced the securing of a contract to strip and mine the coal deposits on more than 2000 acres of land in Hopkins County, Kentucky. The contract is said to be among the largest ever secured by a Knoxville contracting firm, running into several millions of dollars and will require several years to complete.

The deposits lie on what is known as the Number 9 Seam of Western Kentucky, at an average depth of 30 feet under the surface of the earth, and engineers of the construction company have estimated that 100,000,000 cubic yards of earth and stone will be removed in developing the project which will be mined almost exclusively with steam shovels. The field to be exploited in this manner is said to promise a yield of 16,000,000 tons of coal and is said by experts to be one of the finest tracts of undeveloped stripping coal in the Western Kentucky fields and probably the best in the Central West.

In assuming a contract of such proportions the Dempster Co. at once took steps to execute it on the broadest scale possible and George R. Dempster, the president, has just returned from Ohio where he purchased for use on the big stripping project a Model 350 Marion steam shovel equipped with six-yard dipper and 100-foot boom.

The new shovel will give the Dempster Construction Co. a fleet of fifteen machines of this character, all of which are in use in road building and other work in Kentucky, Virginia and Tennessee. The new contract above referred to is not a new venture for the company, Mr. Dempster said, as the company stripped coal several years ago in Eastern Kentucky, and to handle this job a branch office has now been opened at Madisonville, Kentucky.

Members of this enterprising corporation, in addition to George Dempster, are: John S. Thomas, C. Will, J. and R. B. Dempster, sons of Mrs. John Dempster, 99 West Fifth Avenue.

J. Borries, Consulting Engineer of Louisville, who has been conducting surveying and core drilling on property lying four miles north of Dawson Springs, near the right-of-way of the new extension of the Illinois Central Railroad between Dawson Springs and Madisonville, announces that Louisville interests which he represents have purchased 1,400 acres of this land and will start a large strip mining operation as soon as the railroad reaches them.

Mr. Borries said Louisville parties have organized the Dawson Daylight Coal Company to develop the property.

Most of the mining will be done by steam shovel on the surface but there will also be underground mines.

A tipple will be constructed to handle from 50 to 70 carloads of coal per day by next summer and machinery is now being ordered. J. M. Earle, Detroit, representing the owner of most of the land, G. W. Earle, has returned to his home after delivering deeds to the new owners at Louisville. He was assisted in the negotiation by Fred Beshear and C. B. Hall, Dawson Springs, and J. A. Johnson, Madisonville.

The deeds were made to K. U. Meguire, of the Harlan Coal Company, at Louisville, for transfer to the new company.

A. V. Wills & Sons expect to start on two more sections of levee work at East St. Louis. They have 750,000 yards of excavation and will haul it one mile for fill.

Norton Bros. are finishing off their work on 23d Street cut at Kansas City.

W. A. Ross, Kansas City, has contract to build 18 miles of cement road in Jackson County, Missouri.

C. E. Clark & Co., Independence, Missouri, will finish up their drainage work at Whiting, Kansas, about the first of May.

The Lavery Coal Company has started their stripping operation at Moundville, Missouri, and are shipping coal from mine to consumer.

Emerson Cline is operating a 250 Marion shovel for the Indiana Fourth Vein Coal Company at Linton, Indiana.

Curtis Gilligon is craning day shifts on the shovel and John Viand is making smoke.

George Baher is also craning on this shovel and John P. Roberts is pit boss.

Bob Layton, 769 Virginia Street, Gary, Indiana, is repairing a Class-24 Bucyrus dragline for Riley & Hall.

Many of our readers will regret to hear of the death of Lester P. Joel, who died suddenly on February 16th. Mr. Joel was associated with the Vulcan Iron Works for a good many years in the capacity of manager of their Chicago office. He will be greatly missed by the great host of friends and business associates in the engineering and excavating field.

Mr. John C. Paskins, superintendent for the States Corporation at Central City, Kentucky, is as happy as a little boy with a pair of new shoes. The reason is his new 103-C Bucyrus.

McNamara & Flynn have a 70-C Bucyrus working near Princeton, Kentucky, loading dirt for the approaches to the new Illinois Central bridge.

C. H. Flynn, former erector for Bucyrus but now superintendent for the Allied Coal Co. at Zanesville, Ohio, had the time of his life helping erector Ward set up a 30-B Bucyrus dragline last month.

Eastern News

BY E. G. LEWIS

Frederick Schneider, the well-known contractor, and head of Frederick Schneider, Inc., one of the largest contracting firms in the Bronx, New York, was killed on February 27th. The news of his untimely death has been received with a great deal of sympathy and sorrow by his many friends and business associates in excavating and contracting circles.

Northwestern States News

BY A. R. HANCE, PORTLAND, OREGON

Notice has been received by the Public Roads, United States Department of Agriculture, that the contract for the construction of the Husum-Trout Lake Road in Klickitat County, Washington, was awarded to Chris Sauset of Bellingham. The contract consists of grading and draining a 5.1-mile section of the road in the Columbia National Forest. Klickitat County will surface this project with crushed rock when the grading is completed. The county authorities will also grade and surface the 14-mile section beginning with the north end of the project and terminating at Guler. When completed this road will open up a section rich in timber and agricultural resources and natural scenery.

The Ostrander Railway & Timber Company at Kelso recently awarded the contract for the first mile and one-half of the Coweeman Valley Railway which it is building in co-operation with the Weyerhauser Timber Company to John Anderson. This unit is an extension from the Ostrander railway line which will be partially used in the new line. Six miles of railway will be built into the woods at that point this year.

Four of the larger contracts in connection with extensions of irrigation in the Spokane Valley were awarded

recently by the construction engineer of that district, which means that the dirt will be flying as soon as weather permits in putting water on an additional 4842 acres. The earthwork contract calling for excavation of 100,000 cubic yards of material for ditches and pipe lines was let to E. J. Cheatham & Sons of Spokane on the basis of 28 cents a cubic yard. The Company is already assembling its machinery and will employ 150 to 200 men to finish the job by May 15th. The Cheatham Company also secured the contract for the flume work. There will be about two miles of flume running from 4 x 5 feet to 4 x 7 feet. The total of the Cheatham contracts is about $40,000.

The tunnel contract was awarded to the Delivuk Orino Construction Company of Spokane at $16.00 per linear foot. The tunnel will be 640 feet long, 6½ x 8 feet, and will be located about one-half mile west of Spokane Bridge.

The wood stave pipe contract representing $62,646 went to the American Wood Pipe Company of Tacoma, Washington. It calls for three miles of pipe ranging from 26 inches in diameter to 66 inches. The contract includes the installation of this pipe. It will carry the water over a bridge across the Spokane River at Spokane Bridge. The bridge contract has not yet been awarded.

The State Highway Commission of Oregon will advertise a large program of work at its next meeting on March 27th. The work will amount to $800,000. The Commission considered favorably the bridge over the Lewis and Clark River near Astoria, and went on record as favoring calling for bids on the structure in April. The estimated cost is $175,000.

The Gilpin Construction Company of Portland, Oregon, was awarded the contract for the construction work of the Tongue Point Naval Base. The original contract awarded to the Gilpin Company amounted to $160,000 and included the construction of piers, docks and bulkheads and the dredging of 400,000 cubic yards. The Navy Department, however, has increased the contract for work to $220,000, which it is believed is for dredging an additional 400,000 yards. The construction company will start work about the first of April.

There will be from 400 to 500 men engaged on the McKay Reservoir job at Hermiston, Oregon. The sum of $363,000 is in the budget for the year expiring June 30, 1923, and the budget for the year following carries $750,000 for the project, making a total of $1,113,000 for the project up to a year from July 1st.

Linn County surveyors are at work on the county road between this city and Lyons, nine miles west. The road will be graded and graveled and become a part of the market road system. Changes will be made to eliminate a number of short turns. The proposed road will be built by funds from the local district, the county and the state.

The State Highway Commission of Oregon on March 1st let seven contracts for grading and rock surfacing in Grant, Jackson, Klamath, Lane, Sherman and Umatilla Counties, and also for two bridges in Jefferson County.

Pacific Coast News

BY P. H. BIRKHEAD, SAN FRANCISCO, CALIFORNIA

Contract has been awarded to Warren Construction Company, 5444 Hollywood Boulevard, Los Angeles, who bid $138,134.00 for improvement of First Street from Rampart Boulevard to Vermont Avenue.

Preliminary plans are now being prepared by Consulting Engineers Leeds and Barnard, Central Building, Los Angeles, for the construction of a harbor project at Santa Barbara, estimated to cost $500,000.00. Preliminary plans are also being prepared by City Engineer Geo. D. Morrison for certain beach improvements to cost an additional $500,000. Funds are to be raised to finance the construction by a bond issue later and details of the work have not yet been completed.

Graham Bros., Inc., are planning the construction of a rock crushing plant on Santa Catalina Island. Storage facilities estimated to cost $100,000.00 are to be established at Morman Island. The Wrigley Co., Los Angeles, will build and operate barges for transporting the rock crushed at the plant and storage bins to the mainland. Plans for the construction of the works and buildings are now being completed.

Bonds have been voted by the County of San Diego, California, in amount of $600,000.00 to cover cost of paving 57 miles of county highways.

The Utah Central Railroad Company, recently capitalized at $1,000,000 has been authorized by the Interstate Commerce Commission to construct a 50-mile railroad from Wellington to Huntington, in Utah.

Mr. Harvey Kramer is engineer and Mr. Arthur Schelling oiler on the day shift of Oscar Schelling's 30-B Diesel Dragline working near Seal Beach, California. The night shift has Frank Mayes as engineer and Sam Viluda as oiler.

Plans are being completed by the Engineering Department of the Western Pacific Railroad, Mills Building, San Francisco, for the construction of a new railroad yard, terminal shops, engine houses, storehouses, etc., at Stockton. It has not yet been decided whether or not work will be done by day labor or contract.

Mr. G. H. Sharer, formerly engineer of the Pacific Gold Dredging Company's operations at Carrville, California, and previous to that with the Calaveras Dredging Company, has been appointed general manager of the Mount Elbert Gold Dredging Company at Leadville, Colorado. This latter Company is a new corporation formed by interests in Colorado which has taken over the Dairy Ranch dredge and will operate same on the original ground. Mr. Sharer expects to get the dredge started in operation the latter part of March.

Construction of a branch railroad to cost $400,000.00 to run from Magunden, seven miles east of Bakersfield, to Arvin, a total distance of nineteen miles, will be begun at once. The line will be ready to handle the 1923 fruit crop from the Arvin and Weed Patch Districts.

Hamilton & Gleason have been awarded about twenty-five miles of double track work by the Santa Fe. There are approximately one million yards involved in the project. A Bucyrus 50-B, 30-B, and two 70-C's are being used.

Surveys have been completed for a railway in Mexico from Mexicali to the port of Lobaruba, a distance of 125 miles. The line penetrates a stretch of territory which will largely be given over to colonization projects.

The Fruit Growers' Supply Company of Susanville, California, is considering the construction of an electric railway from its plant to its timber holdings in the Eagle Lake Section of Lassen County. The project would shorten the haulage of logs about seven miles, the route being through Piute Canyon, and will require about nine months to complete.

Resumption of steam-shovel mining operations on Sacramento Hill by the Copper Queen Branch of the Phelps Dodge Corporation awaits completion of preparatory work. A large force of men has been placed at work overhauling and repairing the steam-shovel and railway equipment. G. H. Dowell, manager, announces that the first unit of the new 4000-ton concentrating mill at Warren will be placed in operation about May 1, 1923, and will be followed by the other three units at intervals of about two weeks each. It is planned to have all four units in operation by July 1. Prior to the suspension of steam-shovel operations on November 1, 1921, sufficient ore was developed on Sacramento Hill to assure a continuous ore supply for the concentrator.

The Engineering Department of the Southern Pacific Railroad, 65 Market Street, San Francisco, has been instructed by the Board of Directors of the Southern Pacific Railroad to prepare plans for the construction

of the following work: 1—A 12-mile double tracking project over the Sierra Nevada Mountains; 2—A 31-mile double-tracking project over the Pepuota; estimated cost $2,500,000.00.

Contract has been awarded to the Warren Construction Company, Bacon Building, Oakland, who bid $89,659 for the grading of 3½ to 4 miles of Government Highway in Siskiyou County, known as the Salmon River Project.

Wm. Boone is running a 14-B shovel in Los Angeles for Chas. G. Willis & Son.

Southern States Notes

BY C. N. BALLENTINE AND W. W. WHORLEY

G. C. Goodrich of Albany, Alabama, was awarded twenty miles of road work in Bibb County, Alabama. The road will be finished with local gravel and will offer a new route between Woodstock and Centerville.

Drainage bonds of the Eudora Western Drainage District in the amount of $400,000.00 were recently sold at par. This project will reclaim 126,000 acres of land in Chicot County, and it is expected that bids will be advertised for, in a short time.

Steady progress is being made by the Government forces on Wilson Dam at Florence, Alabama. The latest design calls for a double-track railroad and highway bridge which will be placed above the dam.

The Golden Gravel Company of Golden, Mississippi, are installing an up-to-date washing plant at that point, and will soon be in position to supply sand, gravel, ballast and road-surfacing material.

Plans are being prepared and contracts will be let at an early date for the construction of three dams on the Ouachita River in Arkansas. This project is being developed by the Arkansas Light & Power Company of Pine Bluff, and will be used to supply a large number of nearby towns with electricity.

Lawrence, Nixon & Phillips of Jackson, Mississippi, report the outlook for the coming season as very favorable.

Bids were recently opened at Helena, Arkansas, on 1,800,000 yards of drainage work in that vicinity. The W. E. Callahan Construction Company of Dallas, Texas, were low bidders.

Brooks-Callaway of Atlanta, Georgia, were successful in securing about 2,000,000 yards of grading on the Chesapeake & Ohio Railroad at Clifton Forge, Virginia. The work will involve grading for a new yard and change of a river channel.

Nichols Contracting Co. of Atlanta secured a nice job on the Louisville & Nashville Railroad near Barboursville, Kentucky.

R. L. Morris is operating and C. G. Cowell is craning a Bucyrus 95 for the Camden Road Material Company at Camden, Tennessee.

J. F. Hooper is handling a 30-B for W. G. Bush & Company at Nashville, Tennessee.

P. O. Crosby is at the levers of a 20-B High Lift which the Pocahontas Coal & Mining Company are using to strip coal at Pocahontas, Alabama.

Pig iron production in the Birmingham District is at a high level with every indication of a further increase.

St. Louis Items

BY A. B. KOENIG

Mulvill Bros. bought a carload of mules at the stock yards here which they have added to their team outfit on the Chicago & Alton Railroad.

Leach Construction Co. are at work on 14 miles of concrete and 28 miles of gravel road work and bridges near Kennett, Missouri. J. E. McElroy is in charge.

W. E. Callahan Construction Co. have 120,000 yards of cleanout work suitable for a small dragline and another job of about 20,000 yards topping out levee, nice team work on Illinois River, to sublet. If interested in this see Paul Grafe, their representative, at Beardstown, Illinois.

E. D. Bedwell, President of the Pine Mountain Coal Co., Fort Smith, Arkansas, writes that they are arranging to open a large strip pit near Heavener, Oklahoma, on the Kansas City Southern Railroad. He would like to get in touch with contractors who are able to handle either the light or heavy stripping.

E. L. Davis, Jr., Caruthersville, Missouri, will have 12 teams idle there in a few days.

Pat McCarthy, formerly of Dunn & McCarthy, passed through St. Louis on his way to Hot Springs, Arkansas, to take a rest for a few weeks.

Byrne Bros. Construction Co., Chicago, were low bidders for construction of Illinois Waterway at Utica. They bid $1,229,842 to complete work in three years and $1,326,482 to complete work in two years. The awarding of contract was deferred because of a suit pending in the LaSalle County Court to acquire a certain tract of land necessary for a part of this construction.

The Walsh Construction Co. were represented here last week by Tom Walsh, Hummer Kahl and Dan Terry. They bid on the Frisco Railroad work. A little too high.

J. J. McInerney is shipping his team outfit from Wood River, Illinois, to Brighton, Illinois, on a piece of Chicago & Alton Railroad work that he subbed from Mulvill Bros.

Jas. Woods has finished his road work at New Athens, Illinois, moving outfit to Shipman, Illinois on the Chicago & Alton Railroad.

J. F. Albers has subbed a small piece of team work from Mulvill Bros. on the Chicago & Alton Railroad north of Shipman, Illinois.

H. D. Patterson Co., Keystone Building, Pittsburgh, Pennsylvania, have a good 55-team outfit idle that they would like to place on work immediately. They will arrange to contract work or rent teams.

R. F. Haupt, Superintendent of Cameron, Joyce & Co., is making arrangements to resume their state road work in Northern Illinois.

J. R. Reese returned from Hot Springs feeling "bully." Reese is open for a superintendent job, railroad, state highway or concrete work. 217 East Clay Street, Knightstown, Indiana, will catch him.

Sad news awaited P. J. Hannan of Hannan Construction Co. here on his return from Florida the latter part of February. A telegram informed him of his Brother Jas. P.'s death in New York.

E. S. Hill, representing Winston Bros. Co., came in from the north to size up the labor situation and things in general in this part of the country.

Canada

Vancouver Notes

BY J. C. MOON

Announcement is made that Hon. Ernest Lapointe, Minister of Marine and Fisheries, Ottawa, will introduce a resolution authorizing a loan of $5,000,000 to the Vancouver Harbor Commission for harbor improvements, among which will be extension of grain elevator.

Wm. Small, chief engineer of the Northern Construction Co., which is building the Bannatyne Pier at Vancouver, at a cost of $6,000,000, declared in an interview in Winnipeg recently that the Vancouver Harbor Commissioners will build six similar piers after the Bannatyne Pier has been completed.

Construction of the new Canadian Pacific Railroad pier at Vancouver will be rushed. The company will make definite announcement about March 1 with regard to further contemplated improvements, states Grant Hall, vice-president of the Canadian Pacific Railroad.

D. C. Coleman, vice-president in charge of the Canadian Pacific Railroad western lines states that the Esquimalt & Nanaimo Railway bridge over the Englishman River will be replaced in steel, and that five other structures will also be replaced this year.

City Engineer F. M. Preston reported to the city council that the estimated cost of the Victoria Street

Bridge at Victoria, British Columbia, is $890,675. The council will borrow $161,000 to complete the structure.

Hon. W. J. Sutherland, Minister of Public Works, recently visited the lower mainland section of the Province of British Columbia, where he studied paving projects to prepare for the award of the two remaining contracts of the Pacific Highway from the international boundary to Cloverdale, completing a paved roadway from Vancouver to the boundary.

Work will soon be commenced on the erection of four or five temporary buildings for the University of British Columbia. The buildings will be of frame construction on concrete foundation. Estimated cost, between $350,000 and $400,000. Plans are well advanced at the Department of Public Works under the supervision of Henry Whittaker, chief architect.

J. A. Buckham, M. L. A., stated that the Provincial Government will commence work this spring on the Golden-Leanchoil Road, by contract, at an estimated cost of $234,000.

Luney Bros., contractors for the new Bank of Montreal Building at Victoria, British Columbia, to cost $130,000, will start work at an early date. Contract is to be completed within ten months.

Montreal and Vicinity

BY J. M. WARD

The Harbor Commissioners of Montreal have plans almost ready for a new grain elevator at Tarte Pier. This elevator to cost $2,500,000. Tenders have been called closing in April.

There is expected to be considerable action in Fredericton, New Brunswick, during the coming season. Amongst various projects, the City of Fredericton proposes to spend $50,000 on new pavement, sidewalks and steel tanks. The Board of Education contemplates building a $300,000 high school and the Great War Veterans Association a memorial building costing $250,000.

The City Council of Quebec has plans drawn for a new $50,000 iron bridge 40 feet wide with three 100-foot spans.

The School Board of Sherbrooke contemplates building a $100,000 high school and the City Council will widen their railway viaduct at a cost of $25,000.

The Dominion Government, Department of Public Works, contemplates spending $100,000 for new railway terminals and deep water wharf at Three Rivers, and $125,000 for a new dock at Pembroke, Ontario. Also $60,000 on crib wharf extension at Cap De La Madeleine, Quebec.

The Town Council of St. Andrews, New Brunswick, will build approximately 3 miles of sewers this coming season. The engineers are MacKenzie & Armstrong, Woodstock, New Brunswick.

St. Maurice Paper Co. of Cap De La Madeleine, Quebec, has applied to the Provincial Government for permission to erect water plant and develop water power. This matter has been referred to the Quebec Stream Commission for a report.

Three Rivers Traction Co., Ltd., will call for tenders during April for $100,000 street railway extension.

The Quebec Provincial Government, Department of Roads, is receiving tenders for 6 miles of macadam road on the Levis-St. Lambert Highway and 7 miles on the Levis-Rimouski Highway.

The Seminary of Quebec is preparing plans for a school of medicine, also a forestry school. The architects are Messrs. Bergeron & Lemay, 145 St. John Street, Quebec.

Sydney, Nova Scotia, contemplates building 1½ miles of 24-inch water main.

The New Brunswick Electric Power Commission contemplates developing 35,000 to 60,000 H. P. at Grand Falls, New Brunswick. Transmission lines and branches via the St. John Valley run into something like 200 miles.

The proposed extension of power development by the Southern Canada Power Co., Ltd., which is to be constructed at Drummondville, will be 30,000 H. P. Tenders will probably be called in summer.

The Nova Scotia Construction Co. has been awarded contract for $1,500,000 dam at Kenogami for the Quebec Streams Commission.

Toronto and Vicinity

BY C. E. ENGLAND AND N. DE WIND

As we go to press only a few of the Provincial Highway Contracts have been announced as awarded for this spring, though we had hoped to be able to mention a large number of our highway friends as having a start made for their 1923 program. Amongst the first announced are: D. O. Johnston, Brantford, Ontario; Dufferin Construction Company, Toronto, Ontario; Brennan Paving Company, Hamilton, Ontario; Provincial Paving Company, Toronto, Ontario; W. H. Patterson, Belleville, Ontario; Standard Paving Company, Ottawa, Ontario; Belanger & Walsh, L'Original, Ontario; all of which have been awarded contracts for various forms of hard surface roads.

In the grading and excavating awards appear the following names: J. E. MacDonald, Whitby; National Tar Company, Orillia, Ontario; and J. J. Dewhearst, Wardsville, Ontario.

Further tenders were called on March 7th and again on March 31st. This includes some important work, and it is hoped that by the time the May issue comes out that most of it will be disposed of and the contractors busy organizing their work.

In connection with the letting of Provincial Highway Contracts it is reported that the Department have under advisement a change of the methods of announcing the successful contractors, and which we are sure will be greatly appreciated both by the contractors themselves, and by the equipment and material firms. Any plan that will facilitate letting contractors know at the earliest possible date whether or not they are going to be successful on certain tenders will enable them to bid on other work or not as the case may be. It will also enable them to interview the equipment and material supply houses that much sooner and secure more prompt deliveries than has heretofore been possible. The system in vogue in most of the United States Highway Departments has much in its favor when the bids are opened the day they are called for; numbers, bidders' names, and amount of bid being read in public. It enables the contractors to know where they stand as they can pretty well judge from the competing bidders, and so facilitates business management for all.

Mr. H. S. Nicklin has been appointed City Engineer of Guelph, Ontario, succeeding Mr. F. McArthur who has gone into the contracting business. One of Mr. Nicklin's first announcements is in connection with proposed sewer construction for the city.

The City Department of Works, Toronto, Ontario, has just issued a list of eleven streets on which new water main construction will be introduced in the near future.

The Warren Bituminous Paving Company, Toronto, and Merlo, Merlo & Ray, Ltd., Walkerville, have both been awarded asphaltic concrete construction from the Department of Public Highways amounting to about 11 miles.

Since our last notes the Canadian National Railways have announced their decision to have the combined headquarters at Montreal, now that the Grand Trunk becomes merged with the National System. While this to some extent is a disappointment to Toronto, there are certain compensations as the whole system is now divided into four operating divisions, of which Toronto will be the largest and most important. While Sir Henry Thornton will have his own office at Montreal, it is understood that he will also maintain a staff and office at Ottawa so as to keep in touch with the other Government Departments.

On February 27th and 28th a very successful conference of County and Township Road Superintendents was held at Toronto, Ontario, at the Provincial Highway Department in their new offices. The Hon. F. C. Biggs, Minister of Public Works, and Mr. W. A. MacLean, Deputy Minister, were responsible for the meeting and addressed the road officials.

On the succeeding days, March 1st and 2nd, the annual meeting of the Good Roads Association was held in the same building, attended by a very large number of the members as well as many of the general public interested in the furthering of good roads. Mr. W. H. Brown, the President of the Association, read his annual address, and there was some interesting discussion as well as criticism of road policies contributed by the Lieut. Governor, Col. Cockshutt, Mayor McGuire, and Mr. T. J. Mahony, Ex-President of the Association, and other important speakers.

The City of Hamilton is to be favored with the Tenth Congress of the Canadian Good Roads Association which will be held June 11th to 14th inclusive, and it is expected that all parts of the Dominion will contribute to a record program.

It is said that excellent progress has been made by Grant, Smith & Co. & McDonnell on the construction work of the T. & N. O. Railway at Cochrane, Ontario, on which they commenced work last year, and that everything points to an early resumption of spring work.

Foley Brothers & Hervey are reported to have made a good start in their organization on their 30-mile Longlac Cut-off contract for the Canadian National Railways.

By the time this appears in print Mussens Limited will have moved into their new Toronto offices, 319-20 Confederation Life Building. These larger and more commodious quarters they hope will prove of increased service to their friends. Larger warehouse space has also been arranged for this year.

Winnipeg and Vicinity

BY F. X. AMOS

The Provincial Government of Manitoba are calling for tenders (closing March 17th) for the excavation of drainage ditches in Drainage District No. 2. The work comprises approximately 900,000 cubic yards of excavation.

Mr. H. A. Bowman is the chief engineer of the reclamation branch, under whose jurisdiction the work falls.

We regret to record the death of Mr. A. C. Bryson, at his home in Winnipeg. Mr. Bryson was a veteran railroad contractor and very well known throughout Western Canada.

The many friends of "Rod" McKenzie were shocked to receive news of his death of pneumonia in California on March 1st.

Mr. McKenzie had charge of the building of all the Canadian Northern Lines in Western Canada, and we venture to say that no man was better known or better liked in that whole territory. No man met difficulties with greater optimism, no man met suffering with a kinder heart. Athletic sports was his great hobby, and from no circle will he be missed more than from the devotees of outdoor life. He was very fond of horses, and from his stables came at least two champions. It is perhaps worthy of mention that Mr. McKenzie owned the first automobile in Winnipeg. Although for the last few years his attention had been confined particularly to his oil holdings in Kansas, nevertheless he was a very frequent visitor to Winnipeg, where he still had considerable interests. His funeral took place at Kirkfield, Ontario, on Saturday the 10th of March, and was largely attended by Winnipeg friends.

The City of Winnipeg will start work this spring on the new Standby plant in connection with the hydro-electric system. Estimated cost of the structure $150,000.00.

TRADE NOTES

Consulting Materials Engineer Joins Dwight P. Robinson Staff

Mr. Cloyd M. Chapman has become affiliated with Dwight P. Robinson & Company, Incorporated, as Consulting Materials Engineer. Mr. Chapman, who has been active in the work of the American Society of Testing Materials and the American Concrete Institute, will in the future represent Dwight P. Robinson & Company in the committee work of these societies.

The International Sales Company, 832-33 Hearst Building, San Francisco, California, has been organized for promoting the sale of American products in foreign countries. The company has connections in various oriental countries and will open an office in Shanghai, China, from where its sales policies will be directed.

The S. G. Taylor Chain Company of Chicago wish to call attention to the fact that they were established in 1873 and are now completing their fiftieth year in the manufacture of high-grade steam shovel and dredge chain. Their article is known among the trade as Taylor Mesaba Steam Shovel Chain and Taylor Made Dredge Chain.

In order that the consumer may have an idea as to what a high-grade chain consists of and how it is manufactured they have just issued a new catalog with photographs in detail, and upon request will gladly mail copy.

Mr. T. W. Keele, M. Inst. C. E., having retired from the public service of New South Wales, has commenced practice as a consulting engineer, and is prepared to undertake investigations and to report upon questions relating to hydraulic and marine engineering, and particularly to the water supply and sewerage of cities and towns, and the improvement of harbors and rivers, including wharfage accommodation and dredging.

REVIEW OF BOOKS and CATALOGS

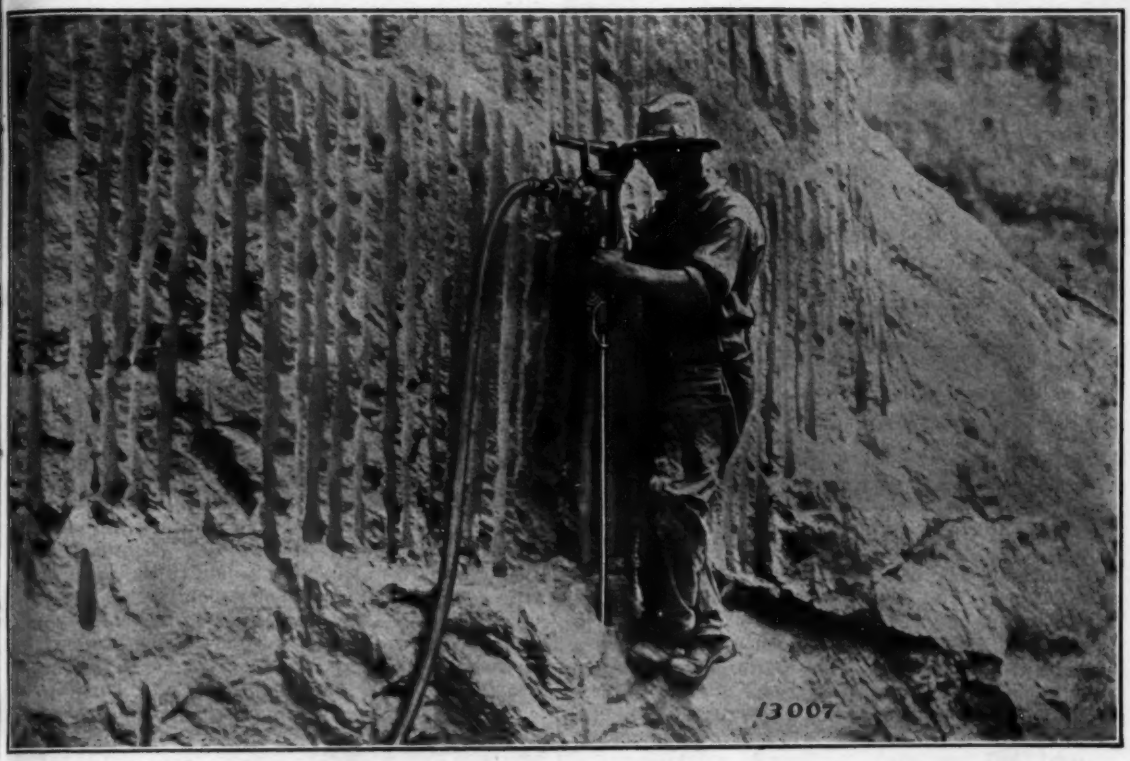
We shall be glad to review, in this column, such books and catalogs as are sent to us.

HETZEL STEEL ROAD FORMS — A 17 x 11, two-color broadside has recently been published by the *Hetzel Steel Form & Iron Co., Warren, Ohio*, showing application of "Armor Plate" steel form to road construction.

THE LA PLANTE-CHOATE COMPANY has recently issued a broadside, printed in two colors and well illustrated, with photographs of the wagon on various jobs. It points out the advantages of the La Plante-Choate 5-yard wagon, the J-4, giving the specifications, construction, etc. Copy may be obtained from *The La Plante-Choate Co., Cedar Rapids, Ohio.*

THE MILBURN WELDING AND CUTTING APPARATUS — *The Alexander Milburn Co., 1416-1428 West Baltimore Street, Baltimore, Md.*, has recently published a 26-page booklet containing information regarding their welding and cutting apparatus, showing photographs of their various models of generators, compressing plants, acetylene plants, torches, carrying outfits, etc.

A NEW MAGAZINE FOR THE USERS OF EXPLOSIVES — Users of explosives will welcome the appearance of a magazine devoted to their interests entitled, "EXPLOSIVES ENGINEER," the first issue of which appeared in March. This magazine is far above the average in composition and stock, and editorially is very well handled. We believe that it fills a long-felt want in this field. It is published monthly by the *Hercules Powder Company of Wilmington, Delaware*, with Harry Roberts, Jr., and N. S. Greensfelder as editors. Subscription price is $3.00 a year.



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Plant of Spruce Pine Sand and Gravel Company, Spruce Pine, Alabama. Note arrangement of conical screens.

The 30-B Bucyrus shovel digging in a hard gravel bank. Note teeth marks.